

Midterm Review Practice

Part I. Level/Scales of Measurement

1. Review the following survey question and identify the level of measurement. (1pt)

A “Stand Your Ground Law” (SYG) states that a person may use force in self-defense when there is reasonable belief of a threat, without an obligation to retreat first. After the death of Trayvon Martin in Florida do you approve of the SYG laws?

Approve _____ Oppose _____

2. The following is an example of a level of measurement. Which level of measurement is exemplified? (1pt) Verbal aptitude measured by the College Board's Scholastic Aptitude Test: Verbal (assuming that each point from 200 to 800 represents an equal amount of aptitude).

Part II. Type of Variable

3. Review the following survey question. What type of variable is party affiliation? (1pt)

What is your party affiliation?

Strong Democrat _____ Weak Democrat _____ Independent _____ Weak

Republican _____ Strong Republican _____

Part III. Measures of Central Tendency and Variability

The data set below is going to be used in **questions 4-7** to help you practice describing data by center and the spread.

Ten people took an IQ test. Their scores were:

110 107 123 93 88 130 110 96 91 124

4. Mean (5pts)
- What is the mean score for this sample?
 - Is the mean resistant to outliers?
 - What measures of spread could you calculate related to the mean?

5. Median (4pts)
 - a. What is the median score for this sample?
 - b. Is the median resistant to outliers?
 - c. What measures of spread could you calculate related to the median?
6. What is the mode for this sample? (2pts)
7. Complete the information below about the data. (8pts)

Minimum value =

Q1 =

Median =

Q3 =

Maximum value =

IQR =

Part. IV. More on the Median

Read the following excerpt from a research article (Kaplan, Pelcovitz, Salvinger, Mandel, & Weiner, 1997) and answer the **questions 10-13**.

“The sample, representing a white, middle-class, suburban population, consisted of 99 physically abused adolescents from Nassau and Suffolk Counties.... For this study, a suicide attempt was defined as any intentional, self-inflicted injury accompanied by a statement of suicidal intent, or classic severe suicidal injuries such as a large ingestion of toxic substances (e.g., 20 pills or more at one time), self-inflicted deep wounds to wrist or throat, unsuccessful hanging, or gunshot wounds to the head or abdomen.”

Table 2 presents comparative data on indicators of adolescent vulnerability leading to mental illness and suicidal behavior. Data are from the Family Adaptability and Cohesion Scale (a 20-item, paper-and-pencil self-report measure on which higher scores indicate more cohesion and more adaptability) and from a Youth Self Report (a measure of academic performance on which the national norm group had a mean score of 50).

Table 2

Indices of Vulnerability in Abused Attempters and Abused Nonattempters

	Attempters		Nonattempters	
	Median	IQR	Median	IQR
Peers				
No. of close friends	3	0-4	4	1-8
No. of peers enjoy	2.5	0-3.5	4	1-7
Family				
Perception of mother's caring	16.5	13.0-27.5	29	20-32
Perception of father's	14.5	6.5-21.5	19.5	14-26

caring				
Family cohesion	20.5	17.5-26	24	23-25
Family adaptability	24	19.0-25.5	22	10-26
Academic performance				
YSR score	35	30-47	42	35-51

Note. IQR = interquartile range (25th to 75th percentile); YSR = Youth Self-Report

9. On **average**, which group reported having more close friends? Explain your answer. (2pts)
10. What percentage of nonattempters reported having between 1 and 7 peers they enjoy? Explain your answer. (2pts)
12. What percentage of nonattempters reported having more than 7 peers they enjoy? Explain your answer. (2pts)
13. What is the 75th percentile for “YSR score” for attempters? (2pts)
14. Which group was less variable on family adaptability? Explain. (2pts)

Part V. The Normal Curve Distribution

1. You are social worker placed in an elementary school. You have been asked by the school to work on how best to meet a particular students needs. Among the data you have is the student’s test score on the Cognitive Abilities Test Form 6 (CoGAT-6), which is designed to “assess students’ abilities in reasoning and problem solving using verbal, quantitative, and spatial (nonverbal) symbols. You want to determine how her score compares to the mean in standard deviation units. What type of score do you want?
2. What percent of people have a z score between -1 and 1?
3. What does a z score represent?
4. Standard scores are based on what type of distribution?
5. A healthcare agency uses an assessment that has $\mu=10$ and $\sigma=3$. What is the z score for a score of 14?

6. A z score of -0.5 is what raw score on the healthcare agency assessment?
7. For job satisfaction test with a $\mu=125$ and $\sigma = 7$, what is the z score for a score of 120?
8. A z score of 1.7 is what raw score with a mean of 110 and a SD of 6.7.
9. The Political Science Department has given a midterm statistics exam with a $\mu=70$ and $\sigma=10$. The Sociology Department has given a statistics exam with a $\mu=150$ and $\sigma=30$.
 - a. Relatively speaking, who did better on his/her test, a Political Science student with a score of 82, or a Sociology student with a score of 185?
 - b. If a passing score in Political Science is .5 standard deviations above the mean, what is that score?
10. For a normal distribution with $\mu=100$ and $\sigma=20$:
 - a. What percentage of scores fall below score = 150?
 - b. What percentage of scores fall below score = 88?
11. Suppose that the average savings of families sending a child off to a public university is \$22,000 with a standard deviation of \$1,800. Suppose also that this variable is normally distributed.
 - a. What percentage of families have saved less than \$26,000? (2pt)
 - b. What dollar savings amount has 72 percent of families above it? (2pt)

Part VI. Standard Error of the Mean

12. A test company has a norm sample of 10,000. They found that the mean score on the achievement test they developed is 130 and the standard deviation is 5.
 - a. What is the standard error of the mean? (2pts)
 - b. Using the standard error of the mean, create a 95% confidence interval for the population mean. (3pts)